



#5

A-665B.ST25.txt
SEQUENCE LISTING<110> KOSTENIUK, PAUL
LIU, CHUAN-FA
LACEY, DAVID LEE

<120> MODULATORS OF RECEPTORS FOR PARATHYROID HORMONE AND PARATHYROID HORMONE-RELATED PROTEIN

<130> A-665B

<140> 09/843,221

<141> 2001-04-26

<150> 60/266,673

<151> 2001-02-06

<150> 60/214,860

<151> 2000-06-28

<150> 60/200,053

<151> 2000-04-27

<160> 170

<170> PatentIn version 3.1

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1 5 10 15ggg gga ccg tca gtc ttc ctc ttc ccc cca aaa ccc aag gac acc ctc 96
Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
20 25 30atg atc tcc ccg acc cct gag gtc aca tgc gtg gtg gtg gac gtg agc 144
Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
35 40 45cac gaa gac cct gag gtc aag ttc aac tgg tac gtg gac ggc gtg gag 192
His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu
50 55 60gtg cat aat gcc aag aca aag ccg ccg gag gag cag tac aac agc acg 240
Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr
65 70 75 80tac cgt gtg gtc agc gtc ctc acc gtc ctg cac cag gac tgg ctg aat 288
Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn
85 90 95ggc aag gag tac aag tgc aag gtc tcc aac aaa gcc ctc cca gcc ccc 336
Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro
100 105 110atc gag aaa acc atc tcc aaa gcc aaa ggg cag ccc cga gaa cca cag 384
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gtg tac acc ctg ccc cca tcc cgg gat gag ctg acc aag aac cag gtc      432
Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val
      130                      135                      140

agc ctg acc tgc ctg gtc aaa ggc ttc tat ccc agc gac atc gcc gtg      480
Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val
      145                      150                      155

gag tgg gag agc aat ggg cag ccg gag aac aac tac aag acc acg cct      528
Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro
      165                      170                      175

ccc gtg ctg gac tcc gac ggc tcc ttc ttc ctc tac agc aag ctc acc      576
Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr
      180                      185                      190

gtg gac aag agc agg tgg cag cag ggg aac gtc ttc tca tgc tcc gtg      624
Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val
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atg cat gag gct ctg cac aac cac tac acg cag aag agc ctc tcc ctg      672
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Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
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His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu
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Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr
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Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn
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Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro
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Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln

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115

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Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val
 130 135 140

Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val
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Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro
 165 170 175

Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr
 180 185 190

Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val
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Xaa Xaa Xaa Xaa Xaa
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Trp Leu Arg Lys Lys Leu
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Leu His His Leu Ile
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Gly Gly Gly Cys Gly Gly Gly Gly
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Gly Pro Asn Gly Gly
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 1 5 10 15

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Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp Val His
20 25 30

Asn Phe Val Ala Leu Gly Ala Pro Leu Ala Pro Arg Asp Ala Gly Ser
35 40 45

Gln Arg Pro Arg Lys Lys Glu Asp Asn Val Leu Val Glu Ser His Glu
50 55 60

Lys Ser Leu Gly Glu Ala Asp Lys Ala Asp Val Asn Val Leu Thr Lys
65 70 75 80

Ala Lys Ser Gln

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Ala Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Ala
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Ser Val Glu Arg Met Gln Trp Leu Arg Lys Lys Leu Gln Asp Val His
20 25 30

Asn Phe Val Ser Leu Gly Val Gln Met Ala Ala Arg Glu Gly Ser Tyr
35 40 45

Gln Arg Pro Thr Lys Lys Glu Asp Asn Val Leu Val Asp Gly Asn Ser
50 55 60

Lys Ser Leu Gly Glu Gly Asp Lys Ala Asp Val Asp Val Leu Val Lys
65 70 75 80

Ala Lys Ser Gln

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Leu Met His Asn Leu Gly Lys His Leu Asn Ser Met Glu Arg Val Glu
1 5 10 15

Trp Leu Arg Lys Lys Leu Gln Asp Val His Asn Phe Val Ala Leu Gly
20 25 30

Ala Pro Leu Ala Pro Arg Asp Ala Gly Ser Gln Arg Pro Arg Lys Lys
Page 9

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Glu Asp Asn Val Leu Val Glu Ser His Glu Lys Ser Leu Gly Glu Ala
 50 55 60

Asp Lys Ala Asp Val Asn Val Leu Thr Lys Ala Lys Ser Gln
 65 70 75

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Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
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Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp Val His
 20 25 30

Asn Phe Val Ala Leu Gly Ala Pro Leu Ala Pro Arg
 35 40

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Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
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Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp Val His
 20 25 30

Asn Phe Val Ala Leu Gly
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<210> 15
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Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn Ser
 1 5 10 15

Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp Val His Asn
 20 25 30

Phe Val Ala Leu Gly
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<210> 16
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Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
 1 5 10 15

Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp Val His
 20 25 30

Asn Phe

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Asn Phe

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Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp Val His
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Asn Phe

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Asn Phe

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Tyr Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
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Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp Val His
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Asn Phe

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Ser Leu Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp Val His
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Asn Tyr

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<223> bovine

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1 5 10 15

Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp Val His
20 25 30

Asn Phe

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1 5 10 15

Ser Leu Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp Val His
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Asn Tyr

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Asn Phe

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<213> Rattus rattus

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Ala Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Ala
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Ser Val Glu Arg Met Gln Trp Leu Arg Lys Lys Leu Gln Asp Val His
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Asn Phe

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Ser Val Glu Arg Leu Gln Trp Leu Arg Lys Lys Leu Gln Asp Val His
 20 25 30

Asn Tyr

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Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
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Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp Val
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Ser Met Glu Arg Val Glu Trp Leu Arg Lys Leu Leu Gln Asp Val
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Glu	Arg	Val	Glu	Trp	Leu	Arg	Lys	Lys	Leu	Gln	Asp	Val	His	Asn	Phe
			20					25					30		

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Ser	Glu	Ile	Gln	Phe	Leu	His	Asn	Leu	Gly	Lys	His	Leu	Ser	Ser	Leu
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Glu	Arg	Val	Glu	Trp	Leu	Arg	Lys	Lys	Leu	Gln	Asp	Val	His	Asn	Tyr
			20					25					30		

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<400> 32

Leu	Met	His	Asn	Leu	Gly	Lys	His	Leu	Asn	Ser	Met	Glu	Arg	Val	Glu
1				5					10					15	

Trp	Leu	Arg	Lys	Lys	Leu	Gln	Asp	Val	His	Asn	Phe
			20					25			

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Trp	Leu	Arg	Lys	Lys	Leu	Gln	Asp	Val	His	Asn	Tyr
			20					25			

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Trp	Leu	Arg	Lys	Lys	Leu	Gln	Asp	Val	His	Asn	Phe
			20					25			

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Trp	Leu	Arg	Lys	Lys	Leu	Gln	Asp	Val	His	Asn	Tyr
			20					25			

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Phe	Leu	His	Asn	Leu	Gly	Lys	His	Leu	Ser	Ser	Leu	Glu	Arg	Val	Glu
1				5					10					15	

Trp	Leu	Arg	Lys	Lys	Leu	Gln	Asp	Val	His	Asn	Tyr
			20					25			

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Cys Asn Gly Arg Cys
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<210> 38
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Phe Met His Asn Leu Lys His Leu Ser Ser Met Glu Arg Val Glu Trp
 1 5 10 15

Leu Arg Lys Lys Leu Gln Asp Val His Asn Tyr
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Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
 1 5 10 15

Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp
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Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp
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Ser Val Ser Glu Ile Gln Leu Met His Asn Lys Gly Lys His Leu Asn
1 5 10 15

Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp
20 25 30

<210> 42

<211> 30

<212> PRT

<213> Artificial Sequence

<220>

<223> modified human PTH

<400> 42

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
1 5 10 15

Ser Met Arg Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp
20 25 30

<210> 43

<211> 30

<212> PRT

<213> Artificial Sequence

<220>

<223> modified human PTH

<400> 43

Tyr Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
1 5 10 15

Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp
20 25 30

<210> 44

<211> 30

<212> PRT

<213> Artificial Sequence

<220>

<223> modified human PTH

<400> 44

Ser Val Ser Glu Ile Gln Leu Leu His Asn Leu Gly Lys His Leu Asn
1 5 10 15

Ser Leu Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp
20 25 30

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<210> 45
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> bovine

<400> 45

Ala Val Ser Glu Ile Gln Phe Met His Asn Leu Gly Lys His Leu Ser
 1 5 10 15

Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp
 20 25 30

<210> 46
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified bovine PTH

<400> 46

Ala Val Ser Glu Ile Gln Phe Leu His Asn Leu Gly Lys His Leu Ser
 1 5 10 15

Ser Leu Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp
 20 25 30

<210> 47
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> porcine PTH

<400> 47

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Ser
 1 5 10 15

Ser Leu Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp
 20 25 30

<210> 48
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> rat PTH

<400> 48

Ala Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Ala
 1 5 10 15

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Ser Val Glu Arg Met Gln Trp Leu Arg Lys Lys Leu Gln Asp
20 25 30

<210> 49
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> modified rat PTH

<400> 49

Ala Val Ser Glu Ile Gln Leu Leu His Asn Leu Gly Lys His Leu Ala
1 5 10 15

Ser Val Glu Arg Leu Gln Trp Leu Arg Lys Lys Leu Gln Asp
20 25 30

<210> 50
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTH

<400> 50

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
1 5 10 15

Ser Met Glu Arg Val Glu Trp Leu Arg Lys Leu Leu Gln Asp
20 25 30

<210> 51
<211> 29
<212> PRT
<213> Homo sapiens

<400> 51

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
1 5 10 15

Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln
20 25

<210> 52
<211> 28
<212> PRT
<213> Homo sapiens

<400> 52

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
1 5 10 15

Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu
20 25

<210> 53
 <211> 28
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified PTH

<400> 53

Ser Glu Ile Gln Leu Leu His Asn Leu Gly Lys His Leu Asn Ser Leu
 1 5 10 15

Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp
 20 25

<210> 54
 <211> 28
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> bovine

<400> 54

Ser Glu Ile Gln Phe Met His Asn Leu Gly Lys His Leu Ser Ser Met
 1 5 10 15

Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp
 20 25

<210> 55
 <211> 28
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified bovine PTH

<400> 55

Ser Glu Ile Gln Phe Leu His Asn Leu Gly Lys His Leu Ser Ser Leu
 1 5 10 15

Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp
 20 25

<210> 56
 <211> 24
 <212> PRT
 <213> Homo sapiens

<400> 56

Leu Met His Asn Leu Gly Lys His Leu Asn Ser Met Glu Arg Val Glu
 1 5 10 15

Trp Leu Arg Lys Lys Leu Gln Asp

20

<210> 57
 <211> 24
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTH

<400> 57

Leu Leu His Asn Leu Gly Lys His Leu Asn Ser Leu Glu Arg Val Glu
 1 5 10 15

Trp Leu Arg Lys Lys Leu Gln Asp
 20

<210> 58
 <211> 24
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> bovine

<400> 58

Phe Met His Asn Leu Gly Lys His Leu Ser Ser Met Glu Arg Val Glu
 1 5 10 15

Trp Leu Arg Lys Lys Leu Gln Asp
 20

<210> 59
 <211> 24
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified bovine PTH

<400> 59

Phe Leu His Asn Leu Gly Lys His Leu Ser Ser Leu Glu Arg Val Glu
 1 5 10 15

Trp Leu Arg Lys Lys Leu Gln Asp
 20

<210> 60
 <211> 24
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified bovine PTH

<400> 60

Phe Leu His Asn Leu Trp Lys His Leu Ser Ser Leu Glu Arg Val Glu
 Page 22

1 5 10 15

Trp Leu Arg Lys Lys Leu Gln Asp
20

<210> 61
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> modified bovine PTH

<220>
<221> misc_feature
<222> (7)..(7)
<223> D amino acid

<400> 61

Phe Met His Asn Leu Lys Trp His Leu Ser Ser Met Glu Arg Val Glu
1 5 10 15

Trp Leu Arg Lys Lys Leu Gln Asp
20

<210> 62
<211> 86
<212> PRT
<213> Homo sapiens

<400> 62

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Arg Arg Arg Phe Phe Leu His His Leu Ile Ala Glu Ile His
20 25 30

Thr Ala Glu Ile Arg Ala Thr Ser Glu Val Ser Pro Asn Ser Lys Pro
35 40 45

Ser Pro Asn Thr Lys Asn His Pro Val Arg Phe Gly Ser Asp Asp Glu
50 55 60

Gly Arg Tyr Leu Thr Gln Glu Thr Asn Lys Val Glu Thr Tyr Lys Glu
65 70 75 80

Gln Pro Leu Lys Thr Pro
85

<210> 63
<211> 34
<212> PRT
<213> Homo sapiens

<400> 63

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Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Arg Arg Arg Phe Phe Leu His His Leu Ile Ala Glu Ile His
20 25 30

Thr Ala

<210> 64
<211> 36
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<400> 64

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Arg Arg Arg Phe Phe Leu His His Leu Ile Ala Glu Ile His
20 25 30

Thr Ala Glu Tyr
35

<210> 65
<211> 36
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<400> 65

Ala Val Ser Glu Ile Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Arg Arg Arg Phe Trp Leu His His Leu Ile Ala Glu Ile His
20 25 30

Thr Ala Glu Tyr
35

<210> 66
<211> 35
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<400> 66

Tyr Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile
Page 24

<212> PRT
 <213> Artificial Sequence

<220>
 <223> modified PTHrP

<400> 70

Leu Leu His Asp Lys Gly Lys Ser Ile Asn Leu Leu Arg Arg Arg Phe
 1 5 10 15

Phe Leu His His Leu Ile Ala Glu Ile His Thr Ala
 20 25

<210> 71
 <211> 28
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP

<220>
 <221> misc_feature
 <222> (6)..(6)
 <223> D amino acid

<400> 71

Leu Leu His Asp Leu Trp Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe
 1 5 10 15

Phe Leu His His Leu Ile Ala Glu Ile His Thr Ala
 20 25

<210> 72
 <211> 28
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified PTHrP

<220>
 <221> misc_feature
 <222> (6)..(6)
 <223> D amino acid

<400> 72

Leu Leu His Asn Leu Trp Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe
 1 5 10 15

Phe Leu His His Leu Ile Ala Glu Ile His Thr Ala
 20 25

<210> 73
 <211> 27
 <212> PRT
 <213> Artificial Sequence

<220>
<223> modified PTHrP

<220>
<221> misc_feature
<222> (5)..(5)
<223> D amino acid

<400> 73

Leu His Asn Leu Trp Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe Phe
1 5 10 15

Leu His His Leu Ile Ala Glu Ile His Thr Ala
20 25

<210> 74
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> modified PTHrP

<220>
<221> misc_feature
<222> (5)..(5)
<223> D amino acid

<400> 74

Leu His Asn Leu Phe Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe Phe
1 5 10 15

Leu His His Leu Ile Ala Glu Ile His Thr Ala
20 25

<210> 75
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<220>
<221> misc_feature
<222> (6)..(6)
<223> D amino acid

<400> 75

Leu Leu His Asn Leu Trp Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe
1 5 10 15

Phe Leu His His Leu Ile Ala Glu Ile His Thr Ala
20 25

<210> 76
 <211> 30
 <212> PRT
 <213> Homo sapiens

<400> 76

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
 1 5 10 15

Asp Leu Arg Arg Arg Phe Phe Leu His His Leu Ile Ala Glu
 20 25 30

<210> 77
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP

<400> 77

Ala Val Ser Glu Ile Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
 1 5 10 15

Asp Leu Arg Arg Arg Phe Trp Leu His His Leu Ile Ala Glu
 20 25 30

<210> 78
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> human PTHrP with non-human N-terminal peptide

<400> 78

Tyr Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile
 1 5 10 15

Gln Asp Leu Arg Arg Arg Phe Phe Leu His His Leu Ile Ala Glu
 20 25 30

<210> 79
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP

<220>
 <221> misc_feature
 <222> (12)..(12)
 <223> D amino acid

<400> 79

Ala Val Ser Glu His Gln Leu Leu His Asn Leu Phe Lys Ser Ile Gln

1 **5** **10** **15**

Asp Leu Arg Arg Arg Phe Phe Leu His His Leu Ile Ala Glu
20 25 30

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<210> 80
<211> 24
<212> PRT
<213> Homo sapiens
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<400> 80

Leu Leu His Asp Lys Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe
1 5 10 15

Phe Leu His His Leu Ile Ala Glu
20

<210>	81
<211>	24
<212>	PRT
<213>	Artificial Sequence

<220>
<223> modified human PTHrP

<400> 81

Leu Leu His Asn Leu Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe
1 5 10 15

Phe Leu His His Leu Ile Ala Glu
20

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<210> 82
<211> 24
<212> PRT
<213> Artificial Sequence
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<220>
<223> modified PTHrP

<400> 82

Leu Leu His Asp Lys Gly Lys Ser Ile Asn Leu Leu Arg Arg Arg Phe
1 5 10 15

Phe Leu His His Leu Ile Ala Glu
20

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<210> 83
<211> 23
<212> PRT
<213> Artificial Sequence
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<220>
<223> modified human PTHrP

<400> 83

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Leu Leu His Asp Leu Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe Phe
1 5 10 15

Leu His His Leu Ile Ala Glu
20

<210> 84
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> modified PTHrP

<400> 84

Leu Leu His Asn Leu Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe Phe
1 5 10 15

Leu His His Leu Ile Ala Glu
20

<210> 85
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> modified PTHrP

<220>
<221> misc_feature
<222> (5)..(5)
<223> D amino acid

<400> 85

Leu His Asn Leu Trp Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe Phe
1 5 10 15

Leu His His Leu Ile Ala Glu
20

<210> 86
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> modified PTHrP

<220>
<221> misc_feature
<222> (5)..(5)
<223> D amino acid

<400> 86

Leu His Asn Leu Phe Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe Phe
1 5 10 15

Leu His His Leu Ile Ala Glu
20

<210> 87
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<220>
<221> misc_feature
<222> (6)..(6)
<223> D amino acid

<400> 87

Leu Leu His Asn Leu Trp Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe
1 5 10 15

Phe Leu His His Leu Ile Ala Glu
20

<210> 88
<211> 34
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTH

<400> 88

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
1 5 10 15

Ser Met Glu Arg Val Glu Leu Leu Glu Lys Leu Leu Glu Lys Leu His
20 25 30

Asn Phe

<210> 89
<211> 34
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTH

<400> 89

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
1 5 10 15

Ser Met Glu Arg Val Glu Leu Leu Glu Lys Leu Leu Lys Lys Leu His
20 25 30

Asn Phe

<210> 90
 <211> 34
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTH

<400> 90

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
 1 5 10 15

Ser Met Glu Arg Val Ala Leu Ala Glu Ala Leu Ala Glu Ala Leu His
 20 25 30

Asn Phe

<210> 91
 <211> 34
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTH

<400> 91

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
 1 5 10 15

Ser Met Glu Arg Val Ser Leu Leu Ser Ser Leu Leu Ser Ser Leu His
 20 25 30

Asn Phe

<210> 92
 <211> 34
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTH

<400> 92

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
 1 5 10 15

Ser Met Glu Arg Val Ala Phe Tyr Asp Lys Val Ala Glu Lys Leu His
 20 25 30

Asn Phe

<210> 93
 <211> 28
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTH

<400> 93

Leu	Met	His	Asn	Leu	Gly	Lys	His	Leu	Asn	Ser	Met	Glu	Arg	Val	Glu
1				5					10					15	

Leu	Leu	Glu	Lys	Leu	Leu	Glu	Lys	Leu	His	Asn	Phe
			20					25			

<210> 94
 <211> 28
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTH

<400> 94

Leu	Met	His	Asn	Leu	Gly	Lys	His	Leu	Asn	Ser	Met	Glu	Arg	Val	Glu
1				5					10					15	

Leu	Leu	Glu	Lys	Leu	Leu	Lys	Lys	Leu	His	Asn	Phe
			20					25			

<210> 95
 <211> 28
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTH

<400> 95

Leu	Met	His	Asn	Leu	Gly	Lys	His	Leu	Asn	Ser	Met	Glu	Arg	Val	Ala
1				5					10					15	

Leu	Ala	Glu	Ala	Leu	Ala	Glu	Ala	Leu	His	Asn	Phe
			20					25			

<210> 96
 <211> 28
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTH

<400> 96

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Leu Met His Asn Leu Gly Lys His Leu Asn Ser Met Glu Arg Val Ser
1 5 10 15

Leu Leu Ser Ser Leu Leu Ser Ser Leu His Asn Phe
20 25

<210> 97
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTH

<400> 97

Leu Met His Asn Leu Gly Lys His Leu Asn Ser Met Glu Arg Val Ala
1 5 10 15

Phe Tyr Asp Lys Val Ala Glu Lys Leu His Asn Phe
20 25

<210> 98
<211> 34
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<400> 98

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Arg Arg Arg Glu Leu Leu Glu Lys Leu Leu Glu Lys Leu His
20 25 30

Thr Ala

<210> 99
<211> 34
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<400> 99

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Arg Arg Arg Glu Leu Leu Glu Lys Leu Leu Lys Lys Leu His
20 25 30

Thr Ala

<210> 100
 <211> 34
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP

<400> 100

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
 1 5 10 15

Asp Leu Arg Arg Arg Ala Leu Ala Glu Ala Leu Ala Glu Ala Leu His
 20 25 30

Thr Ala

<210> 101
 <211> 34
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP

<400> 101

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
 1 5 10 15

Asp Leu Arg Arg Arg Ser Leu Leu Ser Ser Leu Leu Ser Ser Leu His
 20 25 30

Thr Ala

<210> 102
 <211> 34
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP

<400> 102

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
 1 5 10 15

Asp Leu Arg Arg Arg Ala Phe Tyr Asp Lys Val Ala Glu Lys Leu His
 20 25 30

Thr Ala

<210> 103
 <211> 28
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP

<400> 103

Leu Leu His Asp Lys Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Glu
 1 5 10 15

Leu Leu Glu Lys Leu Leu Glu Lys Leu His Thr Ala
 20 25

<210> 104
 <211> 28
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP

<400> 104

Leu Leu His Asp Lys Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Glu
 1 5 10 15

Leu Leu Glu Lys Leu Leu Lys Lys Leu His Thr Ala
 20 25

<210> 105
 <211> 28
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP

<400> 105

Leu Leu His Asp Lys Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Ala
 1 5 10 15

Leu Ala Glu Ala Leu Ala Glu Ala Leu His Thr Ala
 20 25

<210> 106
 <211> 28
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP

<400> 106

Leu Leu His Asp Lys Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Ser
 1 5 10 15

Leu Leu Ser Ser Leu Leu Ser Ser Leu His Thr Ala
20 25

<210> 107
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<400> 107

Leu Leu His Asp Lys Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Ala
1 5 10 15

Phe Tyr Asp Lys Val Ala Glu Lys Leu His Thr Ala
20 25

<210> 108
<211> 34
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<400> 108

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Arg Arg Arg Glu Leu Leu Glu Lys Leu Leu Arg Lys Leu His
20 25 30

Thr Ala

<210> 109
<211> 34
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<400> 109

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Arg Arg Arg Glu Leu Leu Glu Lys Leu Leu Glu Lys Leu His
20 25 30

Thr Ser

<210> 110
<211> 37

<212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP

<400> 110

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
 1 5 10 15

Asp Leu Arg Arg Arg Glu Leu Leu Glu Lys Leu Leu Glu Lys Leu His
 20 25 30

Thr Ala Gly Arg Arg
 35

<210> 111
 <211> 34
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP

<400> 111

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
 1 5 10 15

Asp Leu Arg Arg Arg Glu Leu Leu Glu Lys Leu Leu Glu Lys Leu Lys
 20 25 30

Glu Leu

<210> 112
 <211> 34
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP

<400> 112

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
 1 5 10 15

Asp Leu Ala Arg Arg Glu Leu Leu Glu Lys Leu Leu Glu Lys Leu His
 20 25 30

Thr Ala

<210> 113
 <211> 34
 <212> PRT
 <213> Artificial Sequence

<220>

<223> modified human PTHrP

<400> 113

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Arg Arg Ala Glu Leu Leu Glu Lys Leu Leu Glu Lys Leu His
20 25 30

Thr Ala

<210> 114

<211> 34

<212> PRT

<213> Artificial Sequence

<220>

<223> modified human PTHrP

<400> 114

Ala Val Ser Glu Ala Gln Leu Leu His Asp Leu Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Arg Arg Arg Glu Leu Leu Glu Lys Leu Leu Glu Lys Leu His
20 25 30

Ala Leu

<210> 115

<211> 34

<212> PRT

<213> Artificial Sequence

<220>

<223> modified human PTHrP

<400> 115

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Arg Arg Arg Glu Leu Leu Glu Arg Leu Leu Glu Arg Leu His
20 25 30

Thr Ala

<210> 116

<211> 33

<212> PRT

<213> Artificial Sequence

<220>

<223> modified human PTHrP

<400> 116

Ala	Val	Ser	Glu	His	Gln	Leu	Leu	His	Asp	Arg	Gly	Arg	Ser	Ile	Gln
1				5					10					15	

Asp	Arg	Arg	Arg	Glu	Leu	Leu	Glu	Arg	Leu	Leu	Glu	Arg	Leu	His	Thr
			20					25					30		

Ala

<210> 117

<211> 34

<212> PRT

<213> Artificial Sequence

<220>

<223> modified human PTHrP

<400> 117

Ala	Val	Ser	Glu	His	Gln	Leu	Leu	His	Asp	Arg	Gly	Lys	Ser	Ile	Gln
1				5					10					15	

Asp	Leu	Arg	Arg	Arg	Glu	Leu	Leu	Glu	Arg	Leu	Leu	Lys	Arg	Leu	His
			20					25					30		

Thr Ala

<210> 118

<211> 34

<212> PRT

<213> Artificial Sequence

<220>

<223> modified human PTHrP

<400> 118

Ala	Val	Ser	Glu	His	Gln	Leu	Leu	His	Asp	Arg	Gly	Arg	Ser	Ile	Gln
1				5					10					15	

Asp	Leu	Arg	Arg	Arg	Glu	Leu	Leu	Glu	Arg	Leu	Leu	Lys	Arg	Leu	His
			20					25					30		

Thr Ala

<210> 119

<211> 34

<212> PRT

<213> Artificial Sequence

<220>

<223> modified human PTHrP

<400> 119

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
 1 5 10 15

Asp Leu Arg Arg Arg Ala Leu Ala Glu Ala Leu Ala Glu Ala Leu His
 20 25 30

Thr Ala

<210> 120

<211> 34

<212> PRT

<213> Artificial Sequence

<220>

<223> modified human PTHrP

<400> 120

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
 1 5 10 15

Asp Leu Arg Arg Arg Ser Leu Leu Ser Ser Leu Leu Ser Ser Leu His
 20 25 30

Thr Ala

<210> 121

<211> 34

<212> PRT

<213> Artificial Sequence

<220>

<223> modified human PTHrP

<400> 121

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
 1 5 10 15

Asp Leu Arg Arg Arg Ala Phe Tyr Asp Lys Val Ala Glu Lys Leu His
 20 25 30

Thr Ala

<210> 122

<211> 34

<212> PRT

<213> Artificial Sequence

<220>

<223> modified human PTHrP

<400> 122

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Ala Val Ser Glu Ile Gln Phe Met His Asn Leu Gly Lys His Leu Ser
1 5 10 15

Ser Met Glu Arg Val Glu Leu Leu Glu Lys Leu Leu Glu Lys Leu His
20 25 30

Asn Tyr

<210> 123
<211> 34
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<400> 123

Ala Val Ser Glu Ile Gln Phe Met His Asn Leu Gly Lys His Leu Ser
1 5 10 15

Ser Met Arg Arg Arg Glu Leu Leu Glu Lys Leu Leu Glu Lys Leu His
20 25 30

Asn Tyr

<210> 124
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTH

<400> 124

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
1 5 10 15

Ser Met Glu Arg Val Glu Leu Leu Glu Lys Leu Leu Glu Lys
20 25 30

<210> 125
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTH

<400> 125

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
1 5 10 15

Ser Met Glu Arg Val Glu Leu Leu Glu Lys Leu Leu Lys Lys
20 25 30

<210> 126
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTH

<400> 126

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
 1 5 10 15

Ser Met Glu Arg Val Ala Leu Ala Glu Ala Leu Ala Glu Ala
 20 25 30

<210> 127
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTH

<400> 127

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
 1 5 10 15

Ser Met Glu Arg Val Ser Leu Leu Ser Ser Leu Leu Ser Ser
 20 25 30

<210> 128
 <211> 34
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTH

<400> 128

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
 1 5 10 15

Ser Met Glu Arg Val Ala Phe Tyr Asp Lys Val Ala Glu Lys Leu His
 20 25 30

Asn Phe

<210> 129
 <211> 24
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTH

<400> 129

Leu Met His Asn Leu Gly Lys His Leu Asn Ser Met Glu Arg Val Glu
 1 5 10 15

Leu Leu Glu Lys Leu Leu Glu Lys
 20

<210> 130

<211> 24

<212> PRT

<213> Artificial Sequence

<220>

<223> modified human PTH

<400> 130

Leu Met His Asn Leu Gly Lys His Leu Asn Ser Met Glu Arg Val Glu
 1 5 10 15

Leu Leu Glu Lys Leu Leu Lys Lys
 20

<210> 131

<211> 24

<212> PRT

<213> Artificial Sequence

<220>

<223> modified human PTH

<400> 131

Leu Met His Asn Leu Gly Lys His Leu Asn Ser Met Glu Arg Val Ala
 1 5 10 15

Leu Ala Glu Ala Leu Ala Glu Ala
 20

<210> 132

<211> 24

<212> PRT

<213> Artificial Sequence

<220>

<223> modified human PTH

<400> 132

Leu Met His Asn Leu Gly Lys His Leu Asn Ser Met Glu Arg Val Ser
 1 5 10 15

Leu Leu Ser Ser Leu Leu Ser Ser
 20

<210> 133

<211> 24

<212> PRT

<213> Artificial Sequence

<220>

<223> modified human PTH

<400> 133

Leu Met His Asn Leu Gly Lys His Leu Asn Ser Met Glu Arg Val Ala
1 5 10 15

Phe Tyr Asp Lys Val Ala Glu Lys
20

<210> 134

<211> 30

<212> PRT

<213> Artificial Sequence

<220>

<223> modified human PTHrP

<400> 134

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Arg Arg Arg Glu Leu Leu Glu Lys Leu Leu Glu Lys
20 25 30

<210> 135

<211> 30

<212> PRT

<213> Artificial Sequence

<220>

<223> modified human PTHrP

<400> 135

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Arg Arg Arg Glu Leu Leu Glu Lys Leu Leu Lys Lys
20 25 30

<210> 136

<211> 30

<212> PRT

<213> Artificial Sequence

<220>

<223> modified human PTHrP

<400> 136

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Arg Arg Arg Ala Leu Ala Glu Ala Leu Ala Glu Ala
20 25 30

<210> 137
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP

<400> 137

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
 1 5 10 15

Asp Leu Arg Arg Arg Ser Leu Leu Ser Ser Leu Leu Ser Ser
 20 25 30

<210> 138
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP

<400> 138

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
 1 5 10 15

Asp Leu Arg Arg Arg Ala Phe Tyr Asp Lys Val Ala Glu Lys
 20 25 30

<210> 139
 <211> 24
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP

<400> 139

Leu Leu His Asp Lys Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Glu
 1 5 10 15

Leu Leu Glu Lys Leu Leu Glu Lys
 20

<210> 140
 <211> 24
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP

<400> 140

Leu Leu His Asp Lys Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Glu
 1 5 10 15

Leu Leu Glu Lys Leu Leu Lys Lys
20

<210> 141
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<400> 141

Leu Leu His Asp Lys Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Ala
1 5 10 15

Leu Ala Glu Ala Leu Ala Glu Ala
20

<210> 142
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<400> 142

Leu Leu His Asp Lys Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Ser
1 5 10 15

Leu Leu Ser Ser Leu Leu Ser Ser
20

<210> 143
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<400> 143

Leu Leu His Asp Lys Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Ala
1 5 10 15

Phe Tyr Asp Lys Val Ala Glu Lys
20

<210> 144
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<400> 144

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Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Arg Arg Arg Glu Leu Leu Glu Lys Leu Leu Arg Lys
20 25 30

<210> 145
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<400> 145

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Arg Arg Arg Glu Leu Leu Glu Lys Leu Leu Glu Lys
20 25 30

<210> 146
<211> 33
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<400> 146

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Arg Arg Arg Glu Leu Leu Glu Lys Leu Leu Glu Lys Leu His
20 25 30

Thr

<210> 147
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<400> 147

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Arg Arg Arg Glu Leu Leu Glu Lys Leu Leu Glu Lys
20 25 30

<210> 148
<211> 30

<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<400> 148

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Ala Arg Arg Glu Leu Leu Glu Lys Leu Leu Glu Lys
20 25 30

<210> 149
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<400> 149

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Arg Arg Ala Glu Leu Leu Glu Lys Leu Leu Glu Lys
20 25 30

<210> 150
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<400> 150

Ala Val Ser Glu Ala Gln Leu Leu His Asp Leu Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Arg Arg Arg Glu Leu Leu Glu Lys Leu Leu Glu Lys
20 25 30

<210> 151
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> modified human PTHrP

<400> 151

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
1 5 10 15

Asp Leu Arg Arg Arg Glu Leu Leu Glu Arg Leu Leu Glu Arg
20 25 30

<210> 152
 <211> 29
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP
 <400> 152

Ala Val Ser Glu His Gln Leu Leu His Asp Arg Gly Arg Ser Ile Gln
 1 5 10 15

Asp Arg Arg Arg Glu Leu Leu Glu Arg Leu Leu Glu Arg
 20 25

<210> 153
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP
 <400> 153

Ala Val Ser Glu His Gln Leu Leu His Asp Arg Gly Lys Ser Ile Gln
 1 5 10 15

Asp Leu Arg Arg Arg Glu Leu Leu Glu Arg Leu Leu Lys Arg
 20 25 30

<210> 154
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP
 <400> 154

Ala Val Ser Glu His Gln Leu Leu His Asp Arg Gly Arg Ser Ile Gln
 1 5 10 15

Asp Leu Arg Arg Arg Glu Leu Leu Glu Arg Leu Leu Lys Arg
 20 25 30

<210> 155
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP
 <400> 155

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
 1 5 10 15

Asp Leu Arg Arg Arg Ala Leu Ala Glu Ala Leu Ala Glu Ala
 20 25 30

<210> 156
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP

<400> 156

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
 1 5 10 15

Asp Leu Arg Arg Arg Ser Leu Leu Ser Ser Leu Leu Ser Ser
 20 25 30

<210> 157
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP

<400> 157

Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln
 1 5 10 15

Asp Leu Arg Arg Arg Ala Phe Tyr Asp Lys Val Ala Glu Lys
 20 25 30

<210> 158
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP

<400> 158

Ala Val Ser Glu Ile Gln Phe Met His Asn Leu Gly Lys His Leu Ser
 1 5 10 15

Ser Met Glu Arg Val Glu Leu Leu Glu Lys Leu Leu Glu Lys
 20 25 30

<210> 159
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> modified human PTHrP

<400> 159

Ala Val Ser Glu Ile Gln Phe Met His Asn Leu Gly Lys His Leu Ser
 1 5 10 15

Ser Met Arg Arg Arg Glu Leu Leu Glu Lys Leu Leu Glu Lys
 20 25 30

<210> 160

<211> 39

<212> PRT

<213> Artificial Sequence

<220>

<223> TIP39

<400> 160

Ser Leu Ala Leu Ala Asp Asp Ala Ala Phe Arg Glu Arg Ala Arg Leu
 1 5 10 15

Leu Ala Ala Leu Glu Arg Arg His Trp Leu Asn Ser Tyr Met His Lys
 20 25 30

Leu Leu Val Leu Asp Ala Pro
 35

<210> 161

<211> 34

<212> PRT

<213> Artificial Sequence

<220>

<223> Preferred embodiments - PTH

<220>

<221> misc_feature

<222> (34)..(34)

<223> Optional linker and Fc domain attached at the C-terminus

<400> 161

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
 1 5 10 15

Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp Val His
 20 25 30

Asn Phe

<210> 162

<211> 34

<212> PRT

<213> Artificial Sequence

<220>

<223> Preferred embodiments - PTH

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<220>
 <221> misc_feature
 <222> (34)..(34)
 <223> Optional linker and Fc domain attached at the C-terminus

<400> 162

Ser Val Ser Glu Ile Gln Leu Met His Asn Arg Gly Lys His Leu Asn
 1 5 10 15

Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp Val His
 20 25 30

Asn Phe

<210> 163
 <211> 34
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Preferred embodiments - PTH

<220>
 <221> misc_feature
 <222> (34)..(34)
 <223> Optional linker and Fc domain attached at the C-terminus

<400> 163

Ser Val Ser Glu Ile Gln Leu Met His Asn Lys Gly Lys His Leu Asn
 1 5 10 15

Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp Val His
 20 25 30

Asn Phe

<210> 164
 <211> 34
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Preferred embodiments - PTH

<220>
 <221> misc_feature
 <222> (34)..(34)
 <223> Optional linker and Fc domain attached at the C-terminus

<400> 164

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
 1 5 10 15

Ser Met Arg Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp Val His
 20 25 30

Asn Phe

<210> 165
 <211> 31
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> Preferred embodiments - PTH

 <220>
 <221> misc_feature
 <222> (31)..(31)
 <223> Optional linker and Fc domain attached at the C-terminus

<400> 165

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
 1 5 10 15

Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp Val
 20 25 30

<210> 166
 <211> 30
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> Preferred embodiments - PTH

 <220>
 <221> misc_feature
 <222> (30)..(30)
 <223> Optional linker and Fc domain attached at the C-terminus

<400> 166

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
 1 5 10 15

Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp
 20 25 30

<210> 167
 <211> 29
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> Preferred embodiments - PTH

 <220>
 <221> misc_feature
 <222> (1)..(1)
 <223> Fc domain attached at the N-terminus through optional linker

<400> 167

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
 1 5 10 15

Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln
 20 25

<210> 168

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Preferred embodiments - PTH

<220>

<221> misc_feature

<222> (1)..(1)

<223> Fc domain attached at the N-terminus through optional linker

<400> 168

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn
 1 5 10 15

Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu
 20 25

<210> 169

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Preferred embodiments - PTHrP

<220>

<221> misc_feature

<222> (28)..(28)

<223> Optional linker and Fc domain attached at the C-terminus

<400> 169

Leu Leu His Asn Leu Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe
 1 5 10 15

Phe Leu His His Leu Ile Ala Glu Ile His Thr Ala
 20 25

<210> 170

<211> 39

<212> PRT

<213> Artificial Sequence

<220>

<223> Preferred embodiments - TIP39

<220>

<221> misc_feature

<222> (39)..(39)

<223> Optional linker and Fc domain attached at the C-terminus

<400> 170

Ser	Leu	Ala	Leu	Ala	Asp	Asp	Ala	Ala	Phe	Arg	Glu	Arg	Ala	Arg	Leu
1				5					10					15	

Leu	Ala	Ala	Leu	Glu	Arg	Arg	His	Trp	Leu	Asn	Ser	Tyr	Met	His	Lys
			20					25					30		

Leu	Leu	Val	Leu	Asp	Ala	Pro
			35			